

Application No.: 10/608452

Docket No.: TOW-030RCE

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A fuel cell, comprising:

~~a plurality of cell assemblies formed individually and each having a plurality of unit cells~~
a first stack having a plurality of unit cells;

a second stack having a plurality of unit cells, the second stack being separate from the first stack,

wherein each of said plurality of unit cells of the first and second stacks has a membrane electrode assembly including an anode, a cathode, and a solid polymer electrolyte membrane interposed between said anode and said cathode, said cell assemblies wherein the first stack and the second stack have~~ing~~reactant gas passages and coolant passages defined at least partly therein and the reactant gas passages and the coolant passages are connected in series with each other across said plurality of unit cells for ~~one of supplying and or circulating~~ one or more reactant gases and a coolant to said ~~cell assemblies~~first and second stacks;

a fuel gas outlet/inlet passage extending between the unit cells and connecting a fuel gas passage from the first stack with a fuel gas passages, from the second stack of said reactant gas passages, for passing a fuel gas therethrough, said fuel gas outlet/inlet passage provided outside of said cell assembliesfirst and second stacks; and

a fuel gas adjusting mechanism connected to said fuel gas outlet/inlet passage for controlling the flow rate and direction of said fuel gas.

2. (Currently Amended) A fuel cell according to claim 1, further comprising:

an oxygen-containing gas outlet/inlet passage extending between the unit cells and connecting with oxygen-containing gas passages, of said reactant gas passages, for passing an oxygen-containing gas therethrough, said oxygen-containing gas outlet/inlet passage provided outside of said cell assembliesfirst and second stacks; and

an oxygen-containing gas adjusting mechanism connected to said oxygen-containing gas outlet/inlet passage for controlling the flow rate and direction of said oxygen-containing gas.

3. (Currently Amended) A fuel cell according to claim 2, further comprising:

a coolant outlet/inlet passage extending between the unit cells and connecting with said coolant passages, for passing a coolant therethrough, said coolant outlet/inlet passage provided

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outside of said ~~cell assemblies~~ first and second stacks; and

a coolant adjusting mechanism connected to said coolant outlet/inlet passage for controlling the flow rate and direction of said coolant.

4. (Currently Amended) A fuel cell according to claim 1, further comprising:

a coolant outlet/inlet passage extending between the unit cells and connecting with said coolant passages, for passing a coolant therethrough, said coolant outlet/inlet passage provided outside of said ~~cell assembly~~ first and second stacks; and

a coolant adjusting mechanism connected to said coolant outlet/inlet passage for controlling the flow rate and direction of said coolant.

5. (Currently Amended) A fuel cell according to claim 1, wherein at least two of said plurality of unit cells of said ~~cell assemblies~~ first and second stacks are juxtaposed.

6. (Currently Amended) A method of controlling a fuel cell including a plurality of ~~cell assemblies~~ first stack and a separate second stack, formed individually and each stack having a plurality of unit cells, each of said plurality of unit cells has a membrane electrode assembly including an anode, a cathode, and a solid polymer electrolyte membrane interposed between said anode and said cathode, said ~~cell assemblies~~ first and second stacks having reactant gas passages and coolant passages defined at least partly therein and connected in series with each other across said unit cells for ~~one of supplying and or circulating~~ one or more reactant gases and a coolant to said ~~cell assemblies~~ first and second stacks, said method comprising the step of:

controlling a fuel gas flowing through a fuel gas outlet/inlet passage provided outside of said ~~cell assemblies~~ first and second stack and connecting with a fuel gas passages from the first stack with a fuel gas passage from the second stack, of said reactant gas passages, and adjusting the temperatures and relative humidities of said ~~cell assemblies~~ first and second stacks with a fuel gas adjusting mechanism.

7. (Currently Amended) A method according to claim 6, further comprising the step of:

controlling an oxygen-containing gas flowing through an oxygen-containing gas outlet/inlet passage provided outside of said ~~cell assemblies~~ first and second stacks and connecting with an oxygen-containing gas passage passages from the first stack with an oxygen-

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~~containing gas passage from the second stack, of said reactant gas passages, and further~~
adjusting the temperatures and relative humidities of said ~~cell assemblies~~first and second stacks
with an oxygen-containing gas adjusting mechanism.

8. (Currently Amended) A method according to claim 6, further comprising the step of:

controlling a coolant that is one of supplied to and discharged from a coolant outlet/inlet
passage extending between the unit cells and connecting with said coolant passages ~~from the~~
first and second stacks, and further adjusting the temperatures and relative humidities of said ~~cell~~
~~assemblies~~first and second stacks with a coolant adjusting mechanism, said coolant outlet/inlet
passage provided outside of said ~~cell assemblies~~first and second stacks.

9. (Currently Amended) A method according to claim 7, further comprising the step of:

controlling a coolant that is one of supplied to and discharged from a coolant outlet/inlet
passage extending between the unit cells and connecting with said coolant passages ~~from the~~
first and second stacks, and further adjusting the temperatures and relative humidities of said ~~cell~~
~~assemblies~~first and second stacks with a coolant adjusting mechanism, said coolant outlet/inlet
passage provided outside of said ~~cell assemblies~~first and second stacks.

10. (Currently Amended) A method according to claim 9, further comprising the step of:

controlling said reactant gases and said coolant to operate unit cells into which said
coolant is initially introduced at a startup time of said ~~cell assemblies~~first and second stacks.

11. (Currently Amended) A fuel cell, comprising:

~~a plurality of cell assemblies formed individually and each having a plurality of unit~~
~~cells~~a first stack having a plurality of unit cells;

a second stack having a plurality of unit cells, the second stack being separate from the
first stack,

wherein each of said plurality of units cells of the first and second stacks has a membrane
electrode assembly including an anode, a cathode, and a solid polymer electrolyte membrane
interposed between said anode and said cathode, said ~~cell assemblies~~first and second stacks
~~having have~~ reactant gas passages and coolant passages defined at least partly therein and the
reactant gas passages and the coolant passages connected in series with each other across said

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unit cells for ~~one of supplying and or circulating~~ one or more reactant gases and a coolant to said ~~cell assemblies~~ first and second stacks;

an oxygen-containing gas outlet/inlet passage extending between the unit cells and connecting with an oxygen-containing gas passages from the first stack with an oxygen-containing gas passage from the second stack, ~~of said reactant gas passages~~, for passing an oxygen-containing gas therethrough, said oxygen-containing gas outlet/inlet passage provided outside of said ~~cell assemblies~~ first and second stacks; and

an oxygen-containing gas adjusting mechanism for controlling the temperature, relative humidity, and flow rate of the oxygen-containing gas.

12. (Currently Amended) A fuel cell, comprising:

a first stack having a plurality of unit cells ~~a plurality of cell assemblies formed individually and each having a plurality of unit cells~~;

a second stack having a plurality of unit cells, the second stack being separate from the first stack;

wherein each of said plurality of units cells of the first and second stacks has a membrane electrode assembly including an anode, a cathode, and a solid polymer electrolyte membrane interposed between said anode and said cathode, said ~~cell assemblies~~ first and second stacks ~~having~~ reactant gas passages and coolant passages defined at least partly therein and the reactant gas passages and coolant passages are connected in series with each other across said unit cells for one of supplying and or circulating one or more reactant gases and a coolant to said ~~cell assemblies~~ first and second stacks;

a coolant outlet/inlet passage extending between the unit cells and connecting with said coolant passages from the first and second stacks, for passing a coolant therethrough, said coolant outlet/inlet passage provided outside of said ~~cell assemblies~~ first and second stacks; and
a coolant adjusting mechanism for controlling the temperature and flow rate of a coolant.